

## P E T I T I O N

1 Commissioner for Patents  
Alexandria, VA 22313

Your Petitioner, DAVID HARRINGTON, a citizen of the United States and a  
resident of the State of Nebraska, whose post office address is P.O. Box 432, Western,  
5 Nebraska 68464, prays that Letters Patent may be granted to him for a

### MULTI-PERSON VELOCIPEDE

as set forth in the following specification.

### BACKGROUND OF THE INVENTION

10 The present invention relates to velocipedes, and more particularly to a multi-  
person velocipede, which is steered and braked using only the pedal power provided by  
the users.

### DESCRIPTION OF THE PRIOR ART

15 Multi-wheel velocipedes have been in existence for many years and have taken  
many different forms. From bicycles to tricycles and quadricycles, velocipedes have  
provided many different forms of transportation and recreation. Some of these  
velocipedes have even been designed for multiple operators. However, designing a  
multi-person velocipede presents a number of challenging issues. First, the designer  
20 must decide how many operators and how many passengers will occupy the velocipede  
at any one time. Thereafter, the basic concerns of which of the operators will power,  
brake and steer the velocipede must be addressed. These are not simple issues to  
tackle, as the prior art has discovered.

1 U.S. Patent No. 264,855 discloses a multi-person velocipede having two  
rearward wheels and a single forward wheel. A seat is positioned above each of the  
wheels to carry an operator. Each wheel is provided with a directly-gearred crank for  
providing power to the velocipede. The "tricycle built for three" is steered only by the  
5 operator sitting above the forward wheel. Accordingly, the rear passengers provide little  
more than power to the velocipede.

10 U.S. Patent No. 598,322 teaches a tricycle built for two having a single U-shaped  
frame that positions the operators in a side-by-side fashion above a pair of forward  
wheels. Both operators provide power to the velocipede, and both operate a pair of  
independently-moving handlebars that simultaneously turn a single rearward wheel  
through a paired linkage system. Accordingly, the velocipede is properly turned when  
both operators turn their handlebars in substantially the same manner at the  
substantially the same time. However, operation of the handlebars in even slightly  
15 different directions or at different magnitudes may nullify or substantially exaggerate a  
turning operation. Moreover, the addition of a turning linkage increases the likelihood of  
mechanical failure and possible injury.

20 Similarly, U.S. Patent No. 5,511,809 discloses a velocipede that is comprised of  
a pair of generally horizontally-spaced bicycle frames that are traditional in design but  
coupled to one another at their forward and rearward ends. Both operators provide  
power to the velocipede through a multi-gearred system secured on both frames. The  
operators are both responsible for braking and turning operations as well. The  
independent handlebars of the velocipede are coupled to pairs of pivotable forks that  
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1 each engage a single rotating and turnable forward wheel. The independent  
handlebars are coupled together through a pivoting linkage system. Again, the  
velocipede demonstrates a system that requires the operators to use substantially  
similar gear selections, braking actions, and independent turning actions, increasing the  
5 likelihood of a problem or failure in powering, braking or turning the velocipede.

Accordingly, what is needed is a multi-person velocipede that permits each of the  
operators to participate in powering, braking and turning the velocipede in a safe and  
simple fashion.

#### 10 SUMMARY OF THE INVENTION

The multi-person velocipede of the present invention is generally provided with  
first and second frame members, each having a forward and rearward wheel coupled  
thereto. The frame members are preferably coupled to one another with a rigid support  
member that maintains a horizontally-spaced relationship between the frames. Each  
15 frame member is provided with at least one seat on which an operator may sit and  
operate a set of pedals operatively coupled to the forward wheel. In a preferred  
embodiment, a single rigid handlebar extends transversely with the two frames at their  
forward ends.

20 Power is provided to the velocipede through their respective set of pedals, which  
are preferably directly geared to the forward wheels. Braking of the velocipede is also  
initiated by one or both of the operators through a simple reverse pedaling pressure.  
Turning of the velocipede is achieved by one operator engaging in a braking operation  
while the opposite operator continues to pedal in a generally forward direction. The  
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1 velocipede may also be turned by having one operator pedal at a faster rate than the  
oppositely seated operator. The rear wheels are preferably mounted to their respective  
frames so that they pivot freely about a generally vertical axis to assist in turning the  
velocipede.

5 It is therefore a principal object of the present invention to provide a multi-person  
velocipede that simply permits its operators to power, brake and turn the velocipede.

A further object of the present invention is to provide a multi-person velocipede  
that can be turned by its operators without pivoting the forward wheels of the velocipede  
about a generally vertical axis.

10 Still another object of the present invention is to provide a multi-person  
velocipede that is turned by its operators through simple increases in power or braking  
to one side of the velocipede.

15 Yet another object of the present invention is to provide a multi-person  
velocipede having a pair of rotatable forward wheels that are rigidly coupled to a frame  
and a pair of rotatable rearward wheels that are pivotably coupled to the frame.

These and other objects of the present invention will be apparent to those of skill  
in the art.

#### 20 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a rear perspective view of one embodiment of the multi-person  
velocipede of the present invention; and

Figure 2 is an exploded view of the multi-person velocipede of Figure 1.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

1           The multi-person velocipede 10 of the present invention is generally depicted in  
Figures 1 and 2 of the present invention. The velocipede 10 is generally provided with  
a first frame member 12 and a second frame member 14, both frame members having  
5 forward end portions 16 and 18 and rearward end portions 20 and 22, respectively. A  
first forward wheel 24 is rotatably coupled to the forward end portion 16 of the first  
frame, while a second forward wheel 26 is rotatably coupled to the forward end 18 of  
the second frame 14. The first forward wheel 24 is generally operated by a set of  
pedals having a pair of crank arms 28 and pair of pedals 32 coupled therewith.  
10 Similarly, the second forward wheel 26 is provided with a pair of crank arms 30 and a  
pair of pedals 34. The sets of pedals selectively rotate the forward wheels about axes  
extending perpendicularly through the forward wheels.

          In a preferred embodiment, the sets of pedals are directly geared with the first  
15 wheel 24 and the second wheel 26 to eliminate the necessity of selectively adjustable  
gear systems. However, it is contemplated that a simple multi-gear assembly could be  
provided to both the forward wheels to enable the operators to change the gearing  
ratios in which the forward wheels are powered. In a preferred embodiment, the sets of  
pedals will be geared with the forward wheels to permit the operators to stop pedaling  
20 the cranks 28 and 30 in a forward direction while allowing the first forward wheel 24 and  
the second forward wheel 26 to continue rotating in a forward direction. However, it will  
also be preferred that the sets of pedals be geared with the forward wheels such that  
pressure-sensitive reverse pedaling of the cranks 28 and 30 will apply braking pressure  
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1 to their respective first forward wheel 24 or second forward wheel 26. Such methods of  
directly gearing crank arms to wheels will be known to those of skill in the art and for  
purposes of conciseness will not be discussed in structural detail herein. It is  
contemplated, however, that other gearing methods could be provided such that the  
5 sets of pedals would literally be directly geared to the forward wheels so that the cranks  
28 and 30 rotate in a forward direction with the forward wheels, without the option of  
independent movement or "coasting." In that embodiment, power and braking would be  
applied by each of the operators as described previously. Although it is further  
contemplated in yet another embodiment, standard hand-actuated braking systems  
10 could be provided to selectively engage the rims of the forward wheels to brake the  
velocipede 10.

The velocipede 10 is preferably provided with a first rearward wheel 36 and a  
second rearward wheel 38. The rearward wheels 36 and 38 are rotatably coupled to a  
15 pair of mounting brackets 40 and 42, which are coupled to the rearward end portions 20  
and 22 of the first frame 12 and second frame 14. In a preferred embodiment, the  
mounting brackets 40 and 42 permit the rearward wheels 36 and 38 to freely pivot  
about generally vertical axes. Accordingly, a means for turning the velocipede 10 is  
provided without the necessity of pivoting either or both of the forward wheels 24 or 26  
20 about a generally vertical axis. In this preferred embodiment, a first pair of forks 41 is  
coupled to the forward end portion 16 of the frame 12, and second pair of forks 43 is  
coupled to the forward end portion 18 of the second frame 14. A single elongated  
handlebar 44 is preferably provided to extend between the first pair of forks 41 and the  
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1 second pair of forks 43. In this manner, the handlebar 44 not only provides the  
operators with a stable structure to grasp while operating the velocipede 10, but also  
provides a rigid interconnection between the first frame 12 and the second frame 14  
such that the two frames are positioned in a horizontally-spaced relationship with one  
5 another. However, it is contemplated that one or more supports would couple the first  
frame 12 to the second frame 14 in a horizontally-spaced relationship such as the  
transverse support 46 and/or the cross-support 48 shown in Figures 1 and 2.  
Accordingly, while it is preferred that the support be provided by both the handlebar 44  
and the supports 46 and/or 48, it is contemplated the handlebar 44 or the supports 46  
10 and/or 48 could provide sufficient coupling strength between the first frame 12 and the  
second frame 14.

In use, a first operator will be preferably seated upon a first seat member 50,  
which is coupled to the upper end of the first frame 12. Similarly, it is preferred that a  
15 second operator be positioned atop a second seat member 52 atop the second frame  
14. In this position, both operators are able to easily engage the sets of pedals in  
forward and rearward rotating manners. It is preferred that the velocipede 10 be  
operated in a forward direction by having both operators engage the sets of pedals in a  
forward pedaling fashion. Similarly, braking can be achieved by both operators in the  
20 manners described hereinabove. However, it is contemplated that the forces engaged  
by both operators need not be equal to satisfactorily operate the velocipede 10 of the  
present invention in a forward-moving or braking operation. The velocipede 10 is  
preferably turned during operation by both operators in one of two different ways. First,

1 for example, when a left turn is desired, the second operator could continue operating  
cranks 30 in a generally forward direction while the first operator engaged the cranks 28  
in a braking operation. A left turn can also be attained by simply providing a substantial  
increase of forward pedaling power to the cranks 30 while operating the cranks 28 in a  
5 coasting or moderately forward pedaling manner. Accomplishing right-hand turns is  
preferably achieved in one of the same but oppositely-directed fashions. In either such  
turning operation, the pivotable nature of the rearward wheels 36 and 38 will greatly  
enhance the turning radius of the velocipede 10. However, it is contemplated that the  
velocipede 10 could be engaged in either such turning operation with rigidly fixed  
10 forward and rearward wheels. It is also contemplated that providing the rearward  
wheels 36 and 38 with smaller diameters than those of forward wheels 24 and 26 will  
make it easier to bring the rearward end portions 20 and 22 of the frames 12 and 14  
around any turn that is engaged.

15 Although the velocipede 10 is generally depicted and described herein as  
positioning the operators in an "upright" position, it is contemplated that a recumbent  
position for either or both operators would still satisfy the objects of the present  
invention. Moreover, it is contemplated that the addition of rearward passenger  
members or rearward operators could be easily incorporated with the design of the  
20 present invention.

In the drawings and in the specification, there have been set forth preferred  
embodiments of the invention; and although specific items are employed, these are  
used in a generic and descriptive sense only and not for purposes of limitation.



Changes in the form and proportion of parts, as well as substitution of equivalents, are contemplated as circumstances may suggest or render expedient without departing from the spirit or scope of the invention as further defined in the following claims.

Thus it can be seen that the invention accomplishes at least all of its stated objectives.